

VAPOR DEGREASING Trichloroethylene Solvent Substitution Pollution Prevention Fact Sheet

Alabama Department of Environmental Management, Pollution Prevention Unit

ADEM

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Contact the ADEM ombudsman at 1-800-533-2336 with specific regulatory questions.

Vapor degreasing involves suspending dirty metal parts above a boiling solvent (trichloroethylene and methyl chloroform) allowing the solvent vapor to perform the cleaning. A small engine manufacturer, for example, typically loses significant amounts of solvent to air emissions and spent cleaning solvent. Environmental regulations, worker exposure concerns, liability and costs associated with the storage, transportation and disposal of hazardous waste provide incentives for change. An MACT standard has been promulgated on halogenated solvent cleaners and may require a Title V Permit. For further information contact the ADEM Air Division office or the ADEM ombudsman.

Changes

- Converting from a solvent degreasing to an aqueous cleaning system will use a water based cleaning solution in place of organic solvents.
- Rather than purchasing new equipment, existing equipment may be suitable for modification.
- Metal parts cleaned by aqueous methods are susceptible to rust and corrosion. Air drying and a rust inhibitor supplied in the detergent prevents the corrosion of metal parts after aqueous cleaning.
- A wastewater treatment system for the oily detergent and rinse water can remove pollutants so that effluent limits can be met.

Original Process

- Feedstock: Trichloroethylene, methyl chloroform.
- Waste: The spent trichloroethylene and methyl chloroform were contaminated with machining oils and metal fragments removed from the parts during cleaning.
- Disposal: Air emissions and solvent recycling.

Pollution Prevention Approach

- Feedstock: Detergent (with rust inhibitor).
- Waste: Oily residue removed from the dirty wash and rinse stream by the wastewater treatment system.
- Disposal: Wastewater to publicly-owned treatment works. (A State Indirect Discharge permit may be required). Oil is reused as part of a fuel program.

Economics

- Capital Cost: Approximately \$10,000.
- Operating/Maintenance Cost: Not Available
- Payback Period: Three Months